DOCKET NO.: 289354 US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Shigeru SUZUKI
SERIAL NO.: NEW U.S. PCT APPLICATION
FILED: HEREWITH
INTERNATIONAL APPLICATION NO.: PCT/JP03/14864
INTERNATIONAL FILING DATE: November 21, 2003
FOR: SPRAY GLOW DISCHARGE IONIZATION METHOD AND SYSTEM

REQUEST FOR CONSIDERATION OF DOCUMENTS CITED IN INTERNATIONAL SEARCH REPORT

Commissioner for Patents
Alexandria, Virginia 22313

Sir:

In the matter of the above-identified application for patent, notice is hereby given that applicant(s) request that the Examiner consider the documents cited in the International Search Report according to MPEP §609 and so indicate by a statement in the first Office Action that the information has been considered. When the Form PCT/DO/EO/903 indicates both the search report and copies of the documents are present in the national stage file, there is no requirement for the applicant(s) to submit them (1156 O.G. 91 November 23, 1993).

Respectfully submitted,

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THE FOLLOWING ARE THE ENGLISH TRANSLATION OF ANNEXES TO THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (ARTICLE 34):

Amended Sheets (Page 32-36)

English translation of the Claims as amended and filed with letter of September 10, 2004.

CLAIMS

1. (amended)

An in-spray glow discharge ionization method comprising the steps of:

(a) supplying a fluid containing a substance to be measured and a gas exhibiting Penning effect which is used for forming an a nebulized flow of the fluid; and

(b) generating glow discharge in the nebulized flow of the gas exhibiting Penning effect and the fluid nebulized thereby by applying a voltage of several tens of volts to several tens of kilovolts to generate cations of the gas exhibiting Penning effect and excited atoms exhibiting Penning effect so as to ionize a chemical substance having low ionization probability with high sensitivity, directly or indirectly through an intermediately generated chemical species.

2. The in-spray glow discharge ionization method according to Claim 1, wherein the nebulized flow is heated.

3. The in-spray glow discharge ionization method according to Claim 1, wherein a rare gas is used as the gas exhibiting Penning effect.

4. The in-spray glow discharge ionization method according to Claim 3, wherein argon is used as the rare gas.

5. The in-spray glow discharge ionization method according to Claim 4, wherein the rare gas is argon (Ar), and argon cations (Ar^+) and excited argon (Ar^*) are generated.

6. The in-spray glow discharge ionization method according to Claim 1, further comprising blowing a dry gas in order to dry the nebulized flow.

7. The in-spray glow discharge ionization method according to Claim 6, wherein a nitrogen gas, air, or a rare gas is used as the dry gas.

8. (amended)

An in-spray glow discharge ionization apparatus comprising:

(a) a supply port supplying a fluid containing a substance to be measured;

(b) a gas blowing port which blows a gas exhibiting Penning effect to nebulize the fluid supplied from the supply port;

(c) a ground-side discharge electrode provided at a

generation port at which the nebulized flow is generated; and

(d) a voltage application-side discharge electrode which is disposed in the traveling direction of the nebulized flow and opposed to the ground-side discharge electrode, and which is applied with a voltage of several tens of volts to several tens of kilovolts;

wherein mass spectrometry is performed by ionizing components of the substance to be measured which constitutes the fluid using a cationized and excited gas exhibiting Penning effect while the fluid is being nebulized by the gas exhibiting Penning effect.

9. The in-spray glow discharge ionization apparatus according to Claim 8, further comprising a dry gas blowing port for drying the nebulized flow provided around or in the vicinity of the supply port and the gas blowing port for blowing a gas exhibiting Penning effect for nebulizing the fluid.

10. The in-spray glow discharge ionization apparatus according to Claim 8, wherein the gas exhibiting Penning effect is a rare gas.

11. The in-spray glow discharge ionization apparatus

according to Claim 10, wherein the rare gas is He, Ne, Ar, Kr or Xe.

12. (amended)

The in-spray glow discharge ionization apparatus according to Claim 8, wherein the substance to be measured is a chemical substance which has low ionization probability.

13. The in-spray glow discharge ionization apparatus according to Claim 12, wherein the chemical substance is an aromatic nitro compound, oxine copper, halogenated nitrobenzyl, or a polycyclic aromatic hydrocarbon.

14. The in-spray glow discharge ionization apparatus according to Claim 9, wherein the dry gas is nitrogen, air, or a rare gas.

15. The in-spray glow discharge ionization apparatus according to Claim 8, wherein a surface of at least one of the discharge electrodes is covered with a substance which has low oxidation state.

16. The in-spray glow discharge ionization apparatus according to Claim 15, wherein the substance which has low oxidation state is gold, platinum, or silver.

17. The in-spray glow discharge ionization apparatus according to Claim 8, wherein the voltage application-side discharge electrode includes a plurality of electrodes.

18. The in-spray glow discharge ionization apparatus according to Claim 17, wherein each of said plurality of electrodes is a needle-shaped electrode.

19. (amended)

The in-spray glow discharge ionization apparatus according to Claim 17 or 18, wherein a three-dimensional actuator is provided for adjusting three-dimensional positions of the electrodes.

20. The in-spray glow discharge ionization apparatus according to Claim 8, wherein electrical insulation is performed in an ion source except for the front end of the electrodes.